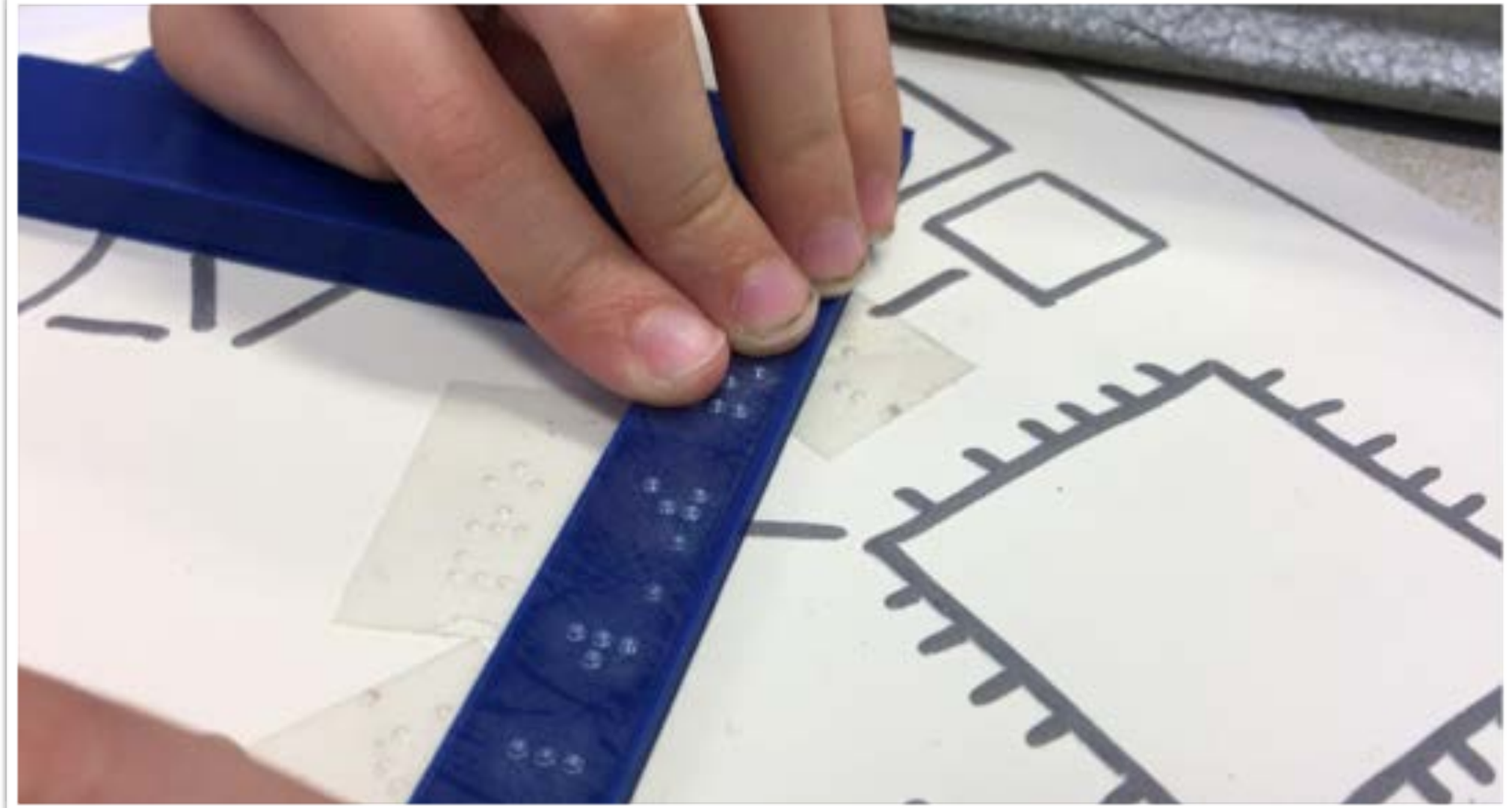


Visio

Accessible computional thinking curriculum

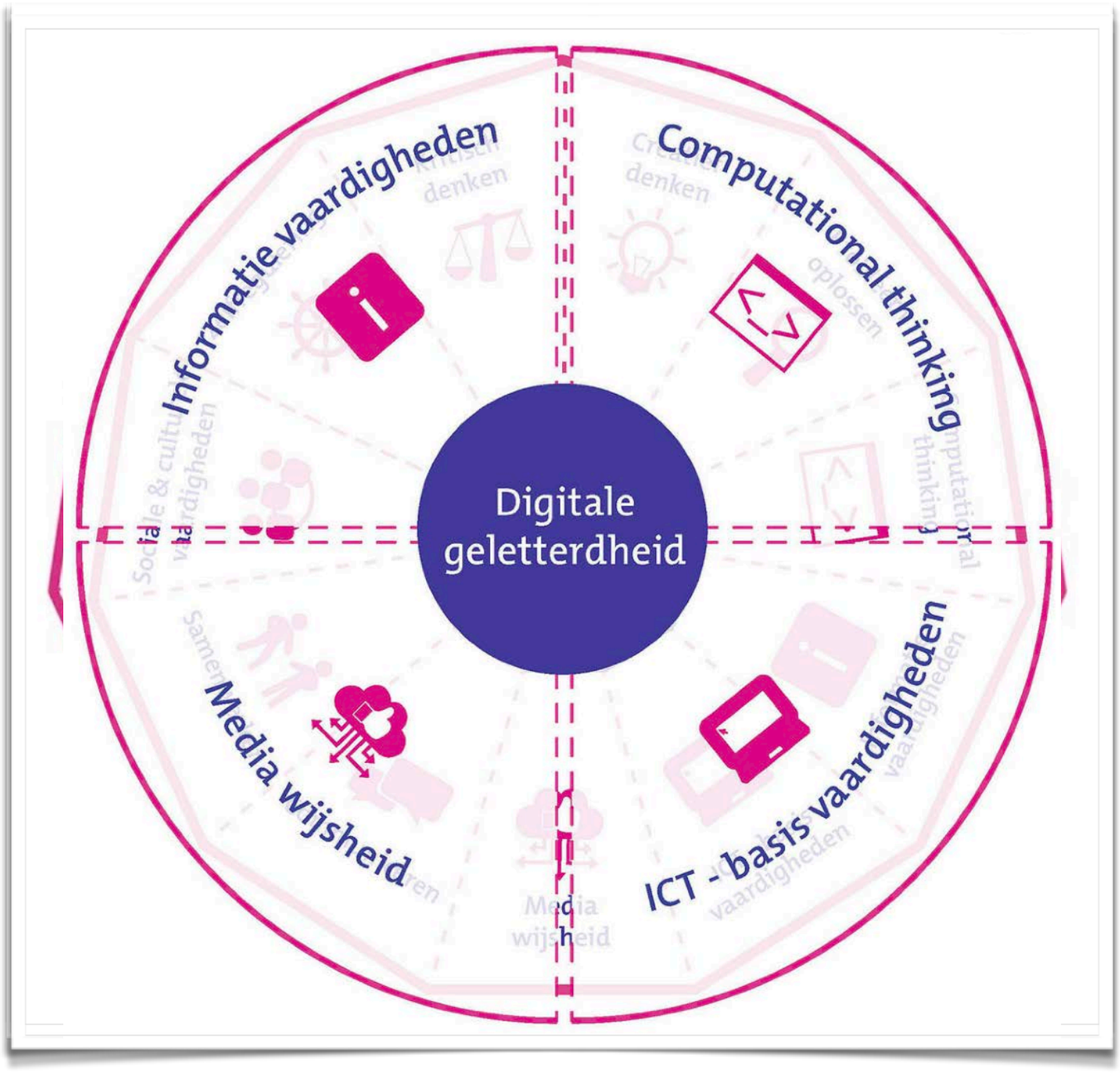
Work...shop

- Draw a circle
- ad two eyes
- ad a crown
- ad two wings
- and ad four legs

Algorithm

- Draw a circle for a body
- ad two eyes on the body
- and a crown
- the creature has two wings
- and four legs

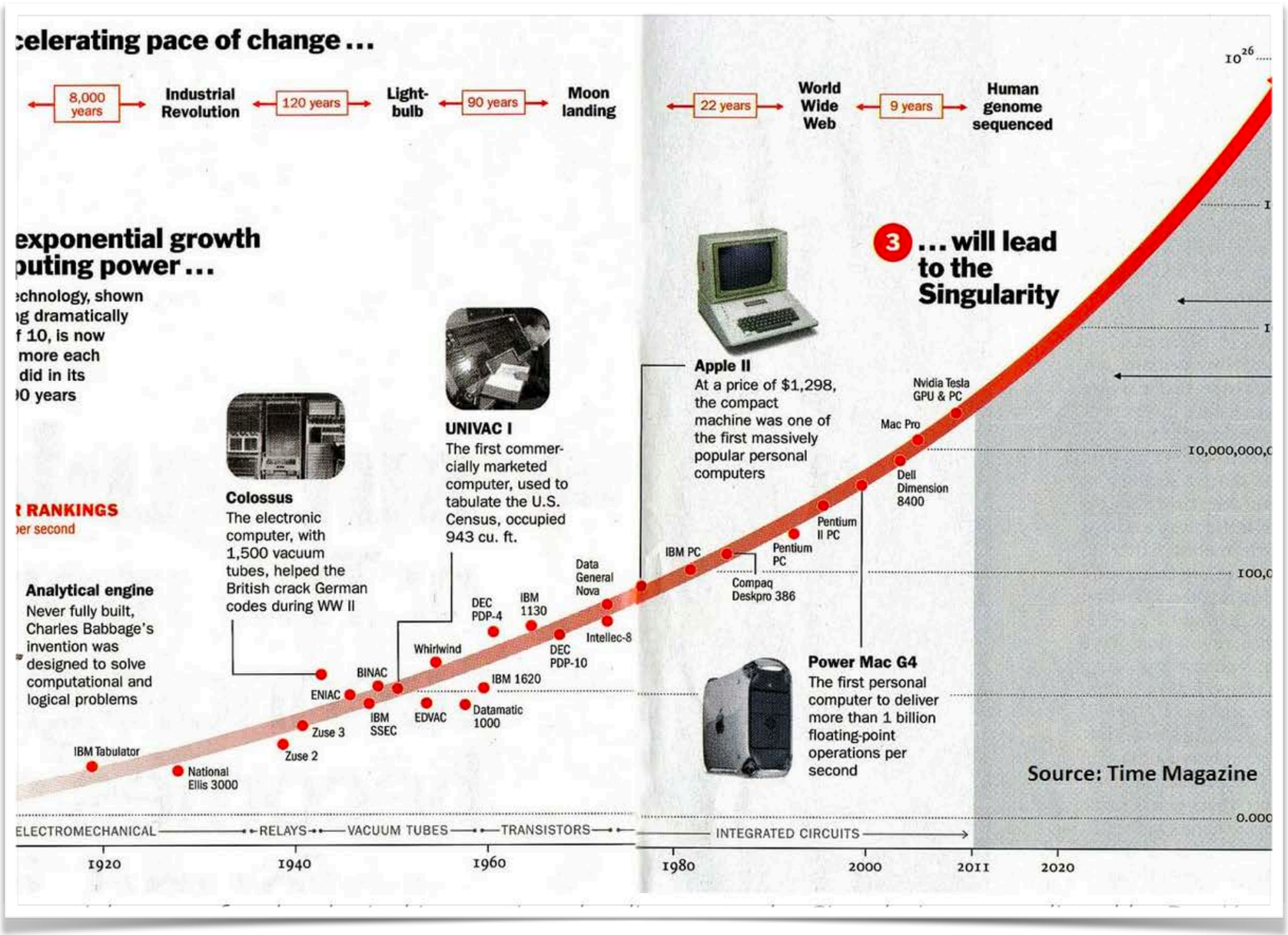
21th century skills



Digital literacy

Changing society, industry 4.0

Not only consumers

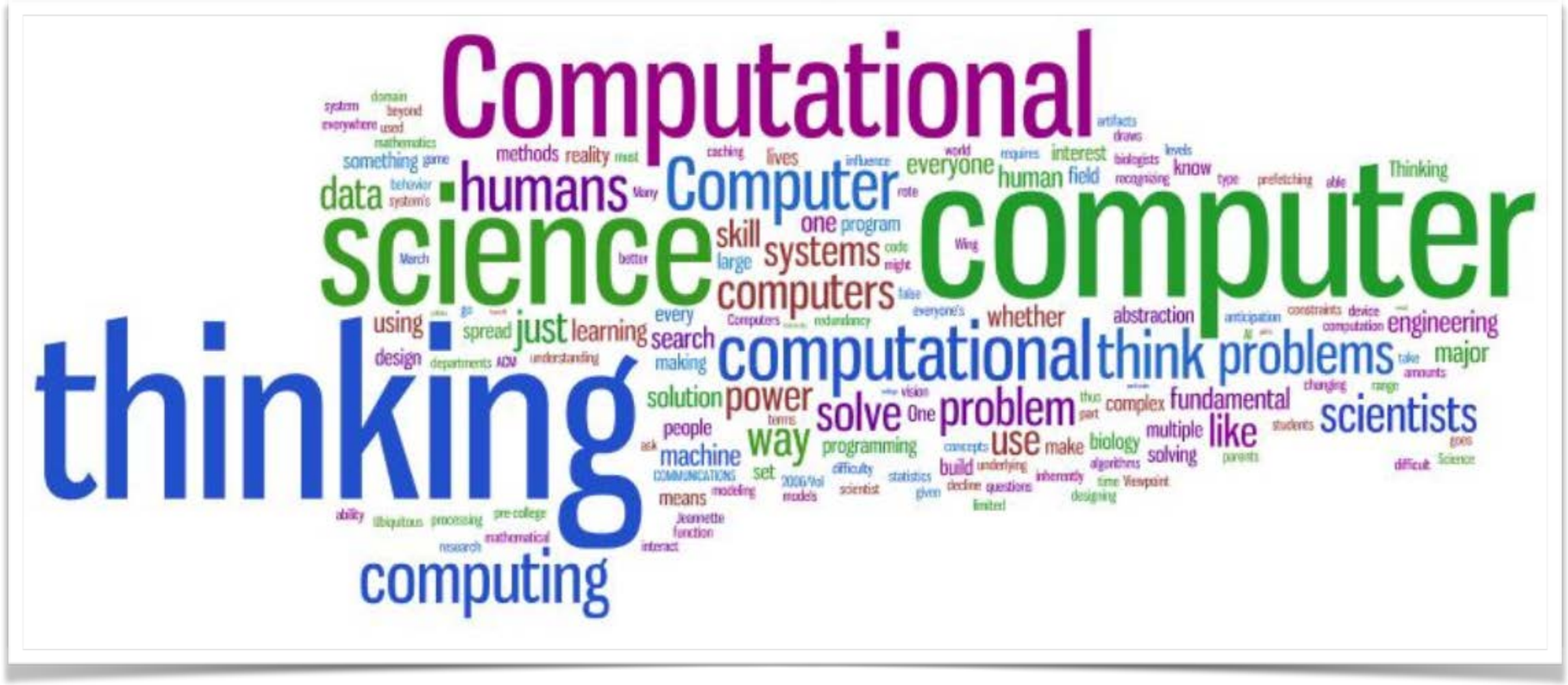


Computational thinking

Formulating a problem, way of thinking

Expressing a solution so a computer can assist

Computational Thinking ≠ programming



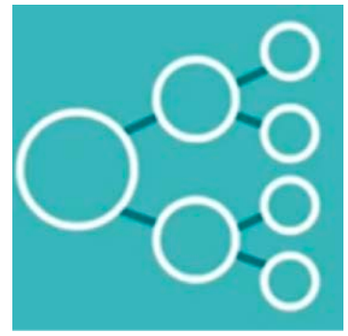
Waarom?

Computational thinking:

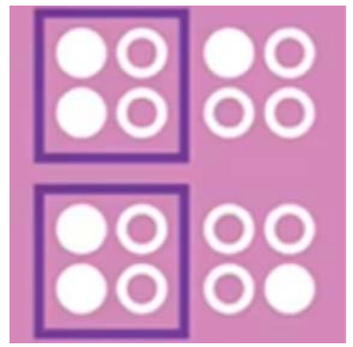
- complements and enhances your existing high school curriculum.
- teaches students how to solve complex problems in a variety of disciplines.
- leverages the strength of computer technology to solve real-world problems.
- and lowering the barrier of using computers!!

Elements

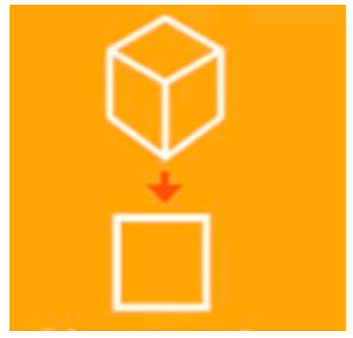
Decomposition
Breaking a complex problem down into smaller, more manageable parts



Pattern recognition
Identify patterns or trends within a problem



Abstraction
Identify specific similarities and differences among similar problems to work towards a solution



Algorithm
Develop step-by-step instructions for solving a problem

Unplugged

Way of thinking

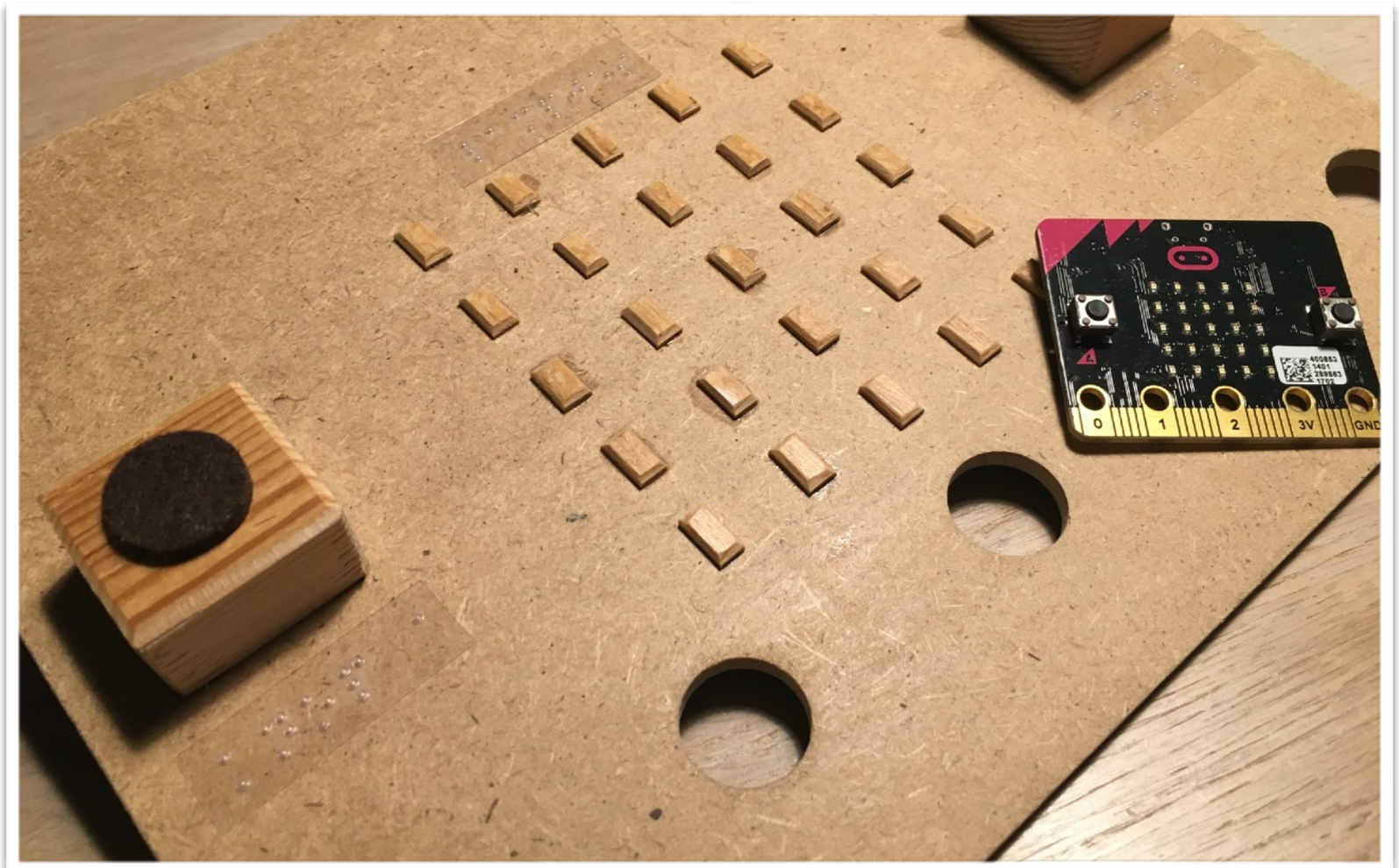
In line with what is known

Meedoen mogelijk maken!

#watkanwel #possibilities

empowerment!

concepts fit well to our students

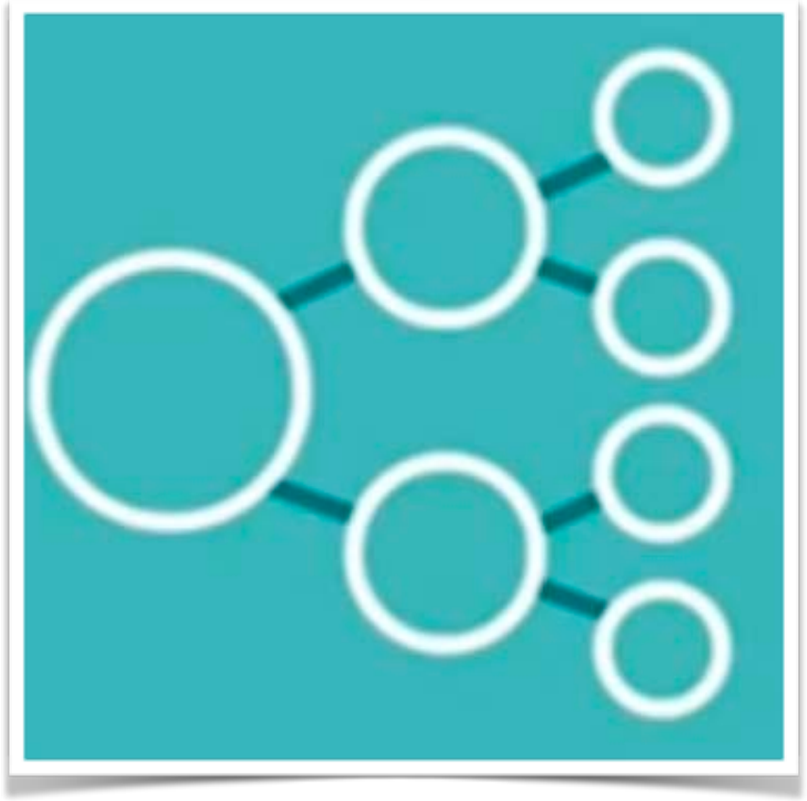


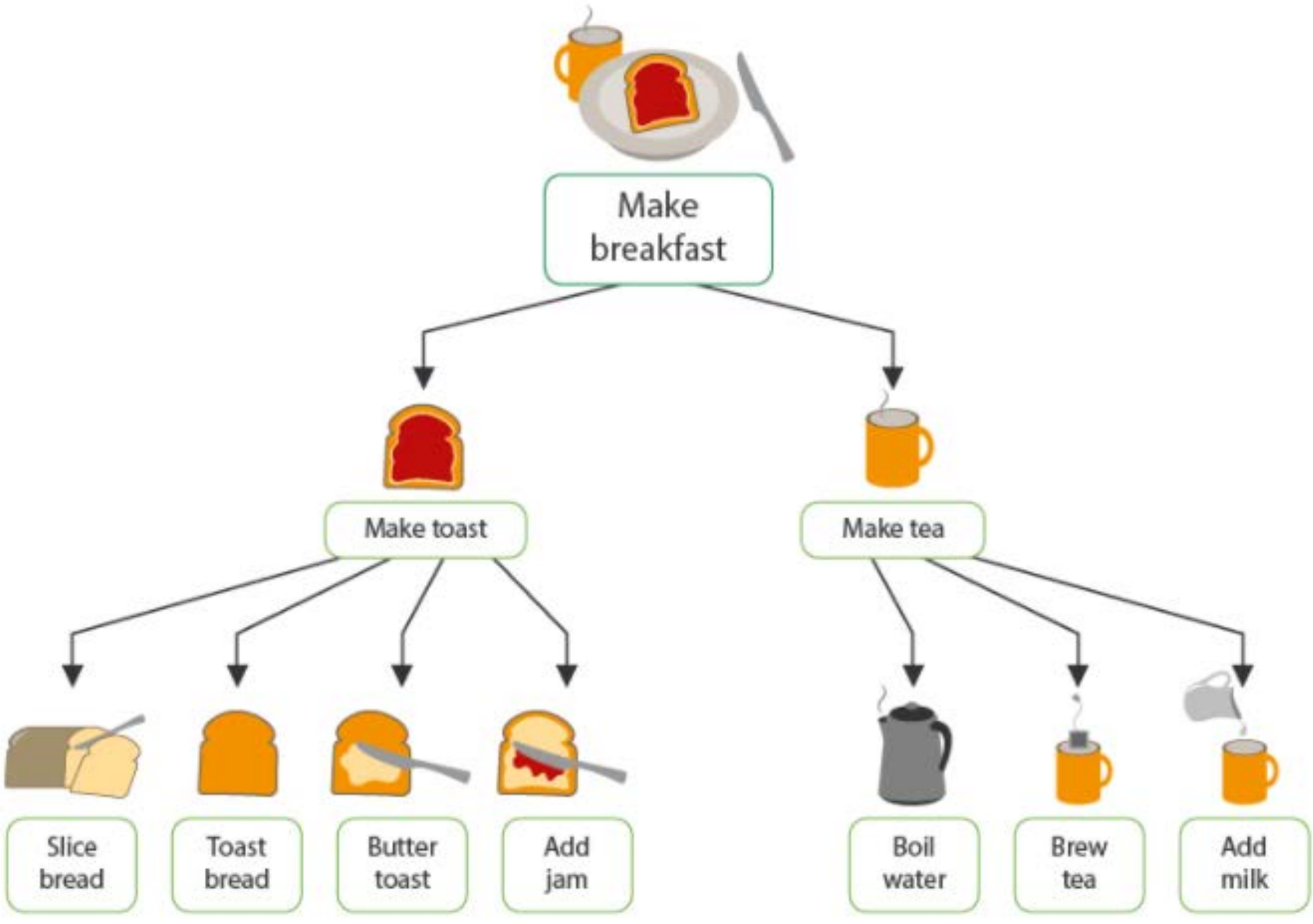
Decomposition

Breaking a complex problem down into smaller, more manageable parts

Why?

- number of minor problems are more easily solved than one very large
- to increase understanding
- team assignments are possible




Make breakfast
Make toast
Make tea
Slice bread
Toast bread
Butter toast
Add jam
Boil water
Brew tea
Add milk


Similarities
Time
Location
WANTED
JEWEL THIEF
DIAMOND
Crime
Witness
Evidence

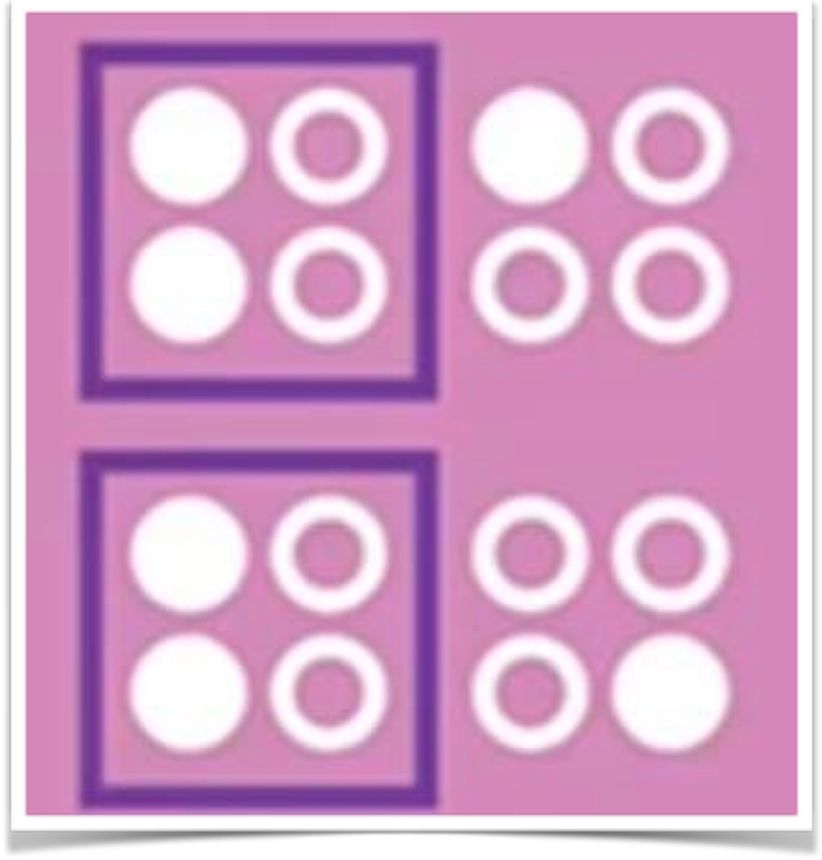
Pattern recognition

Determine patterns, trends and regularities in data

Why?

By recognizing patterns we can:

- predict
- make rules
- solve more general problems

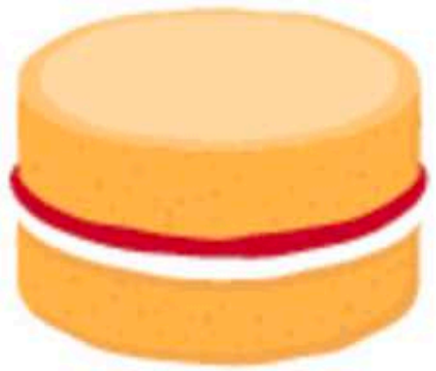


Preheat oven to 190°C

Blend butter, sugar & flour

Bake for 25 minutes

Whisk 300ml of cream



Preheat oven to 180°C

Whisk all butter and sugar

Mix in eggs

Bake for 30 minutes

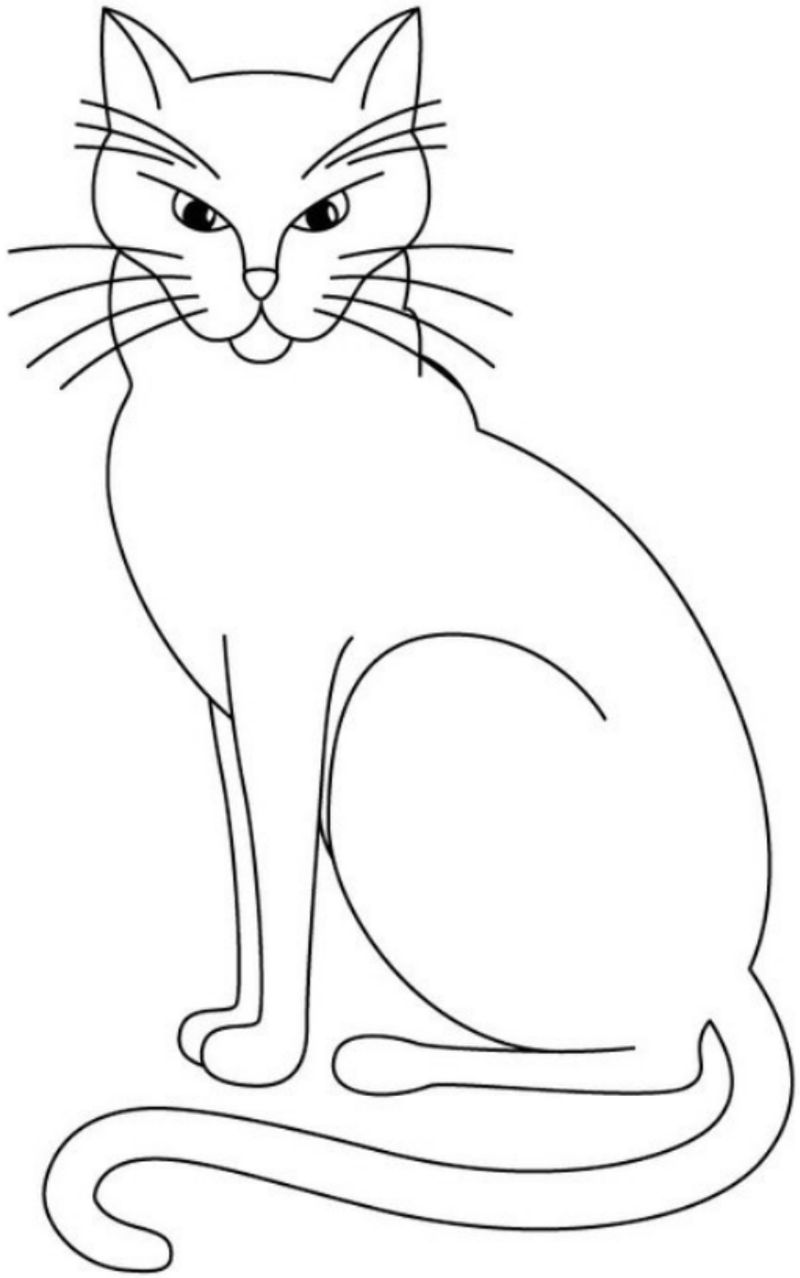
Sugar

Abstraction

Abstraction is about simplifying things; identify what is important without worrying about the details and differences.

Why?

Abstraction allows you to control complexity
A solution that can be used for various problems



Harrow & Wealdstone
Stanmore
Canons Park
Queensbury
Kingsbury
Burnt Oak
Colindale
Hendon Central
Brent Cross
Golders Green
Hampstead
Kenton
Preston Road
Harrow-on-the-Hill
Northwick Park
South Kenton
North Wembley
Wembley Central
Stonebridge Park
Harlesden
Willesden Junction
Wembley Park
Neasden
Dollis Hill
Willesden Green
Kilburn
West Hampstead
Finchley Road
Swiss Cottage
St. John's Wood
Kensal Rise
Brondesbury Park
Brondesbury
Kensal Green
Queen's Park
Kilburn High Road
South Hampstead
Kilburn Park
Maida Vale
Warwick Avenue
Paddington
Edgware Road
Marylebone
Baker Street
Great Portland Street
Euston
Finchley Road & Frognal
Belsize Park
Hampstead Heath
Gospel Oak
Chalk Farm
Camden Town
Mornington Crescent
Kentish Town West
Finchley Central
East Finchley
Highgate
Archway
Tufnell Park
Kentish Town
Camden Road
Caledonian Road
Caledonian Road & Barnsbury
Crouch Hill
Upper Holloway
Wood Green
Turnpike Lane
Manor House
Arsenal
Holloway Road
Finsbury Park
Harringay Green Lanes
Seven Sisters
White Hart Lane
Bruce Grove
South Tottenham
Tottenham Hale
Stamford Hill
Blackhorse Road
Walthamstow Central
Walthamstow Queen's Road
Wood Street
Stoke Newington
Rectory Road
Clapton
St. James Street
Leyton Midland Road
Leytonstone High Road
Highbury & Islington
Dalston Kingsland
Canonbury
Dalston Junction
Haggerston
Hoxton
Hackney Downs
Hackney Central
Homerton
Hackney Wick
London Fields
Cambridge Heath
Bethnal Green
Woodford
South Woodford
Snaresbrook
Redbridge
Wanstead
Gants Hill
Leytonstone
Wanstead Park
Forest Gate
Leyton
Maryland
Stratford International
Stratford
Stratford High Street
Abbey Road
Pudding Mill Lane
King's Cross St. Pancras
Angel
Old Street
Warren Street
Euston Square
Farringdon
Barbican
Russell Square
Goodge Street
Regent's Park
Edgware Road
Royal Oak
Westbourne Park
Ladbroke Grove
Latimer Road
Bayswater
Bond Street
Oxford Circus
Marble Arch
Tottenham Court Road
Holborn
Chancery Lane
Moorgate
Liverpool Street
Aldgate
Aldgate East
Whitechapel
Shoreditch High Street
Bethnal Green
Mile End
Stepney Green
Bow Road
Bow Church
Bromley-by-Bow
West Ham
Plaistow
Devons Road
Langdon Park
All Saints
Star Lane
Canning Town
East Acton
White City
Shepherd's Bush
North Acton
Wood Lane
Holland Park
Notting Hill Gate
Queensway
Lancaster Gate
Hyde Park Corner
Green Park
Covent Garden
Leicester Square
Bank
St. Paul's
Piccadilly Circus
Shepherd's Bush Market
Kensington (Olympia)
High Street Kensington
Knightsbridge
Goldhawk Road
Hammersmith
Barons Court
Gloucester Road
Victoria
St. James's Park
Charing Cross
Cannon Street
Mansion House
Blackfriars
Monument
Tower Hill
Tower Gateway
Temple
Embankment
Westminster
Turnham Green
Stamford Brook
Ravenscourt Park
West Kensington
Earl's Court
South Kensington
Sloane Square
Gunnersbury
West Brompton
Kew Gardens
Richmond
Fulham Broadway
Parsons Green
Putney Bridge
East Putney
Imperial Wharf
Pimlico
Waterloo
Southwark
Lambeth North
Borough
London Bridge
Bermondsey
River Thames
Rotherhithe
Canada Water
Surrey Quays
Queens Road Peckham
New
Shadwell
Wapping
Limehouse
Westferry
Poplar
Blackwall
East India
West India Quay
Canary Wharf
Heron Quays
South Quay
Crossharbour
Mudchute
Island Gardens
Cutty Sark for Maritime Greenwich
Greenwich
North Greenwich
Emirates Greenwich Peninsula

Algorithm

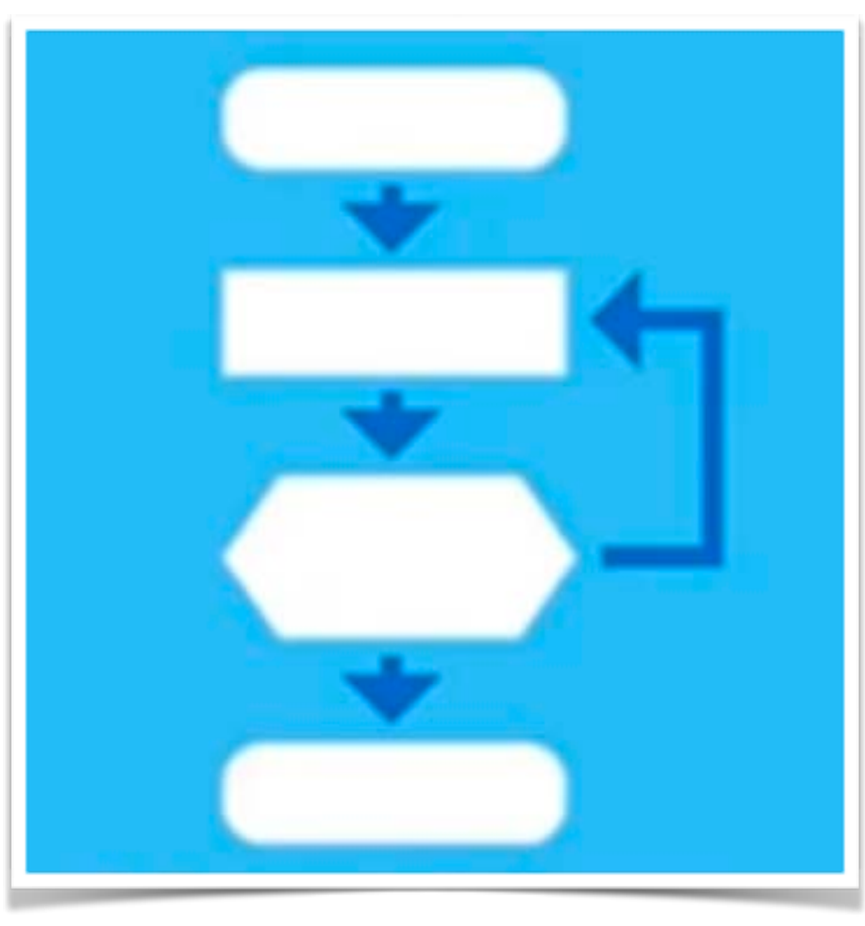
A set of instructions which, when executed step by step in the correct order, lead to a predetermined goal.

Why?

to find the most effective and efficient algorithms;

solving a problem

- in the fastest time
- with the least means or
- in the most effective way



Approaches

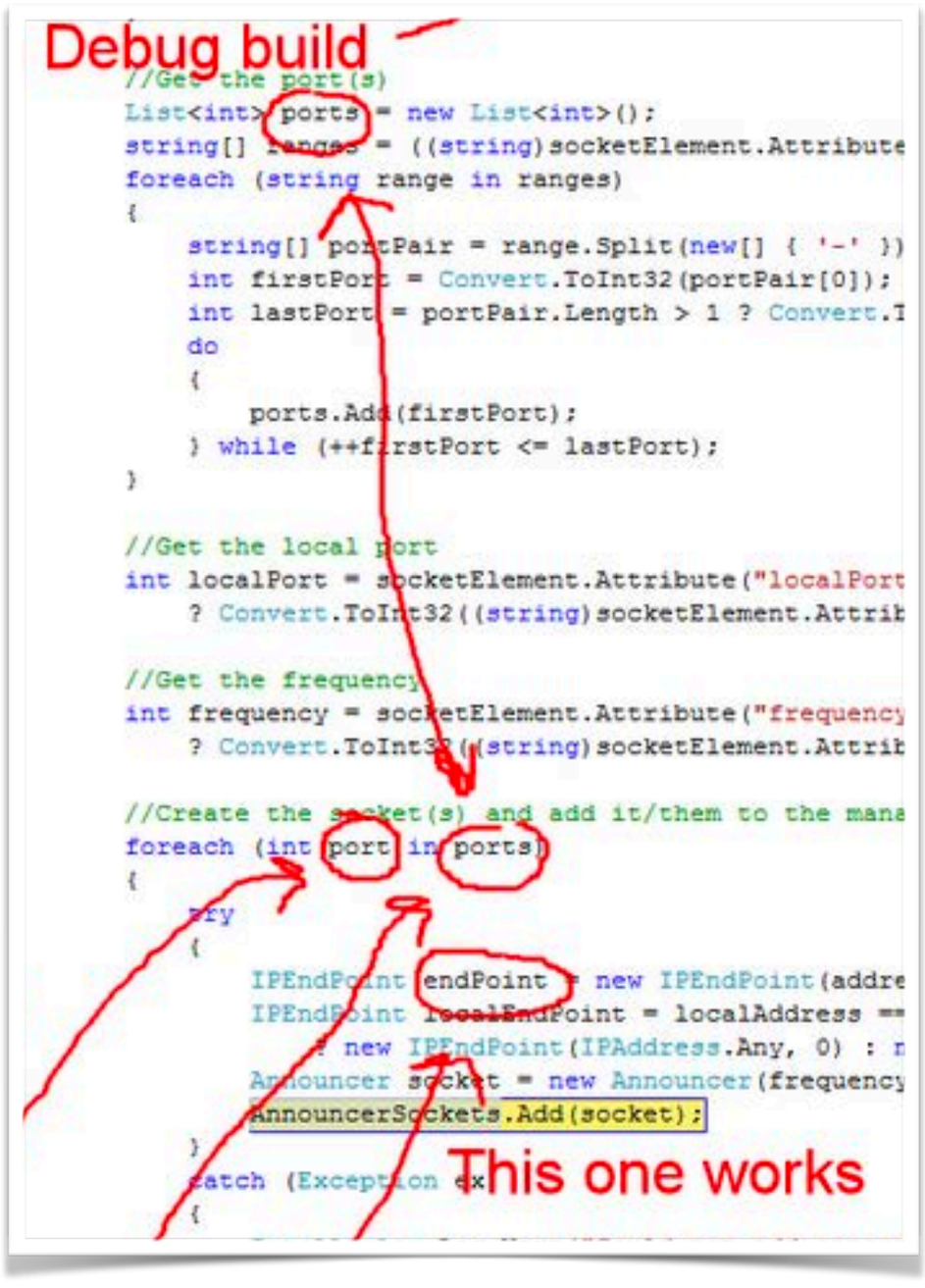
Repeating
a loop, so that something is repeated

Variables
A value that varies
and can be compared with others

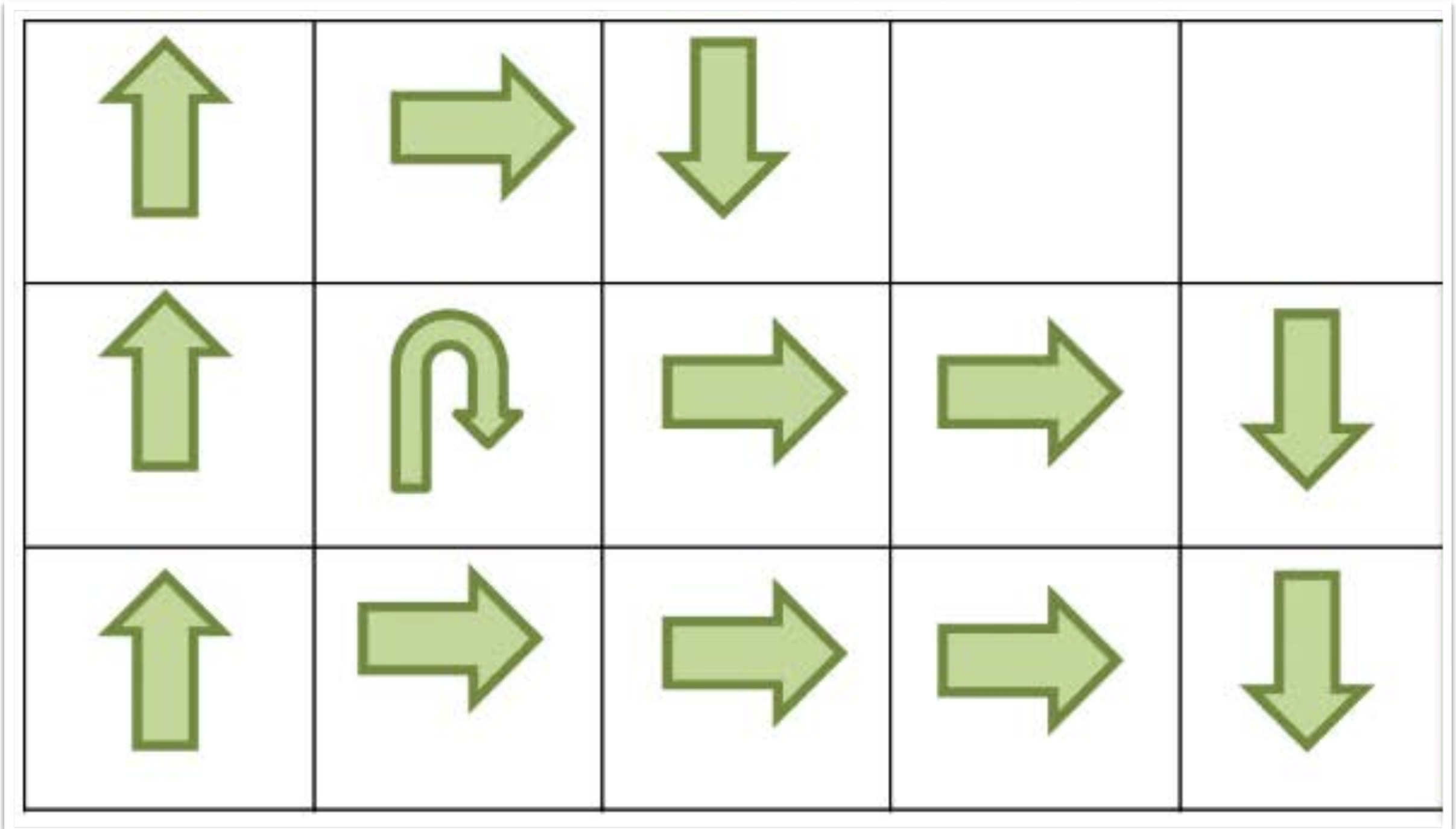
Debugging
finding faults and debug them

Conditions (if..., then...)
something that is done
when certain conditions are met

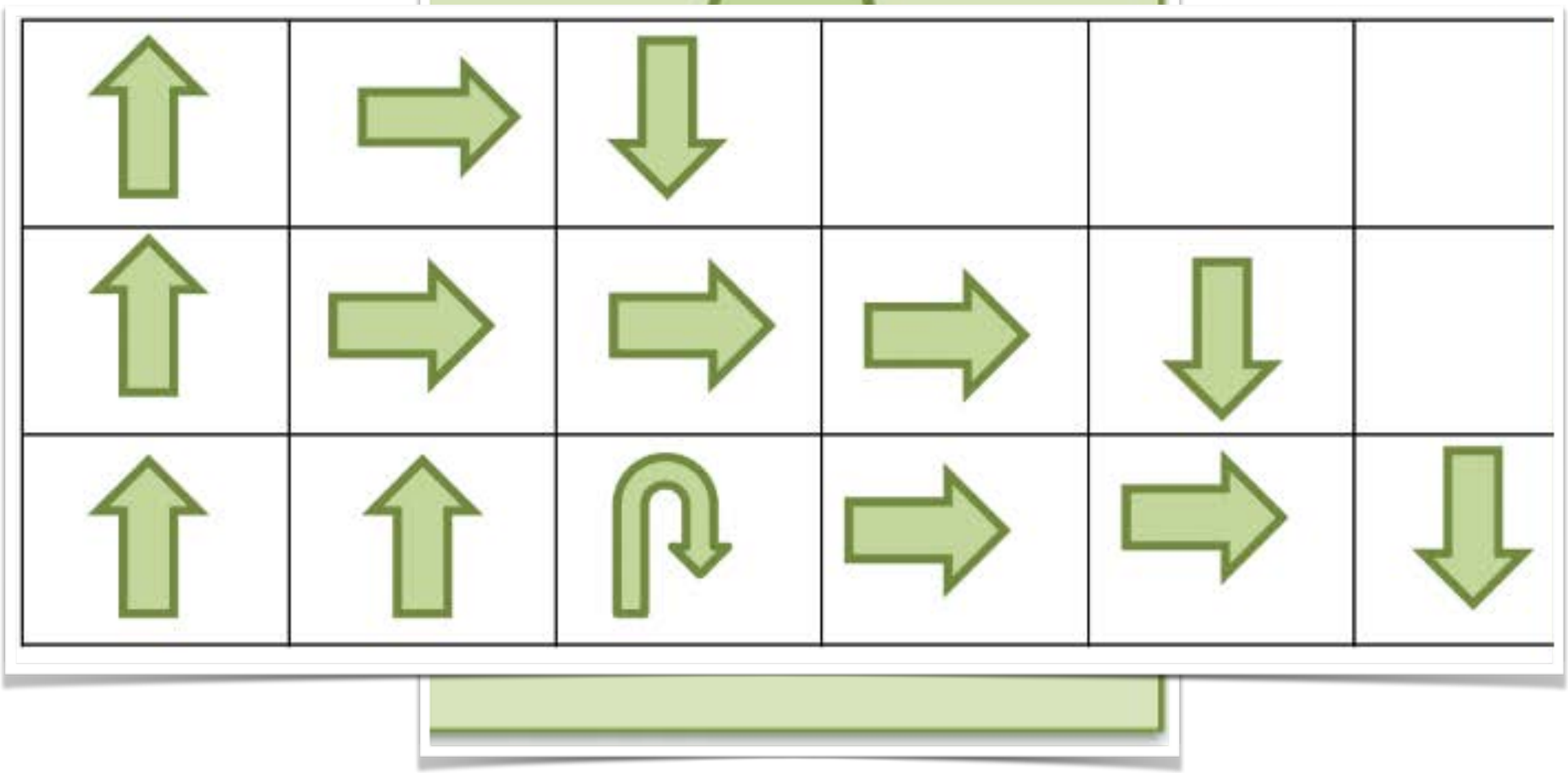
Function (subroutine)
a reusable "help" program
within the "main"



Get to work



Another one...



Visio lessons

Three levels in primary school

Combination of elements CT

Daily life and school environment

Tactile materials

Unplugged lessons

Lower classes

Learn by doing

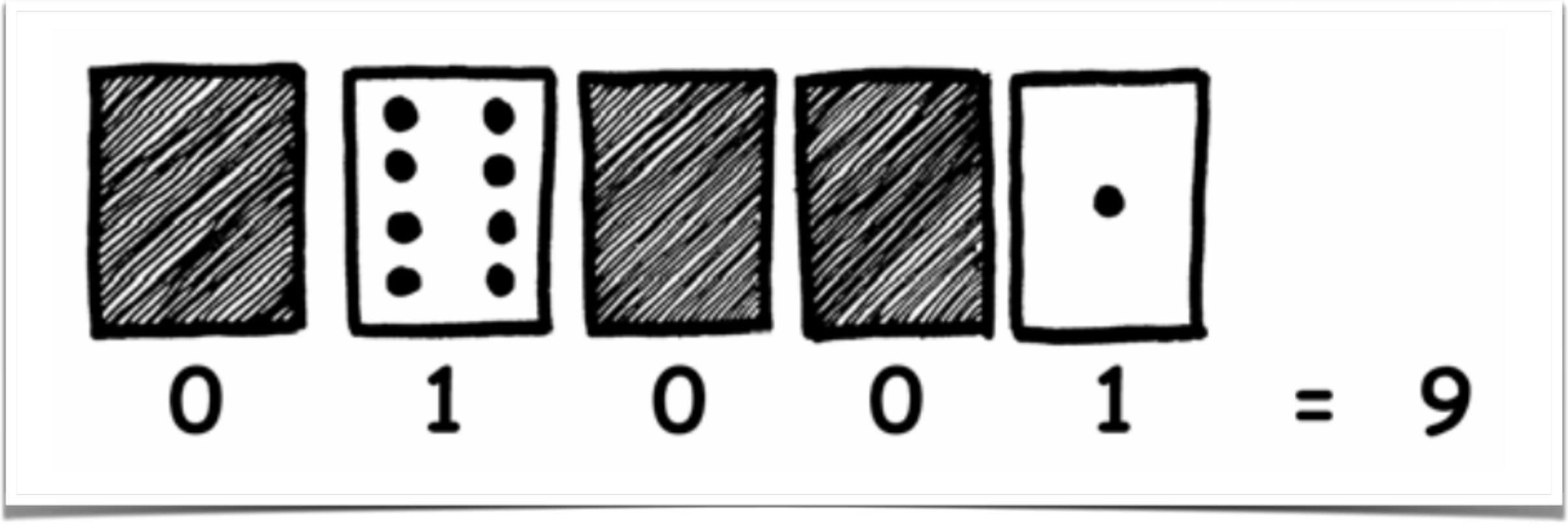
Translation from body to materials

Middle classes

Combination of elements

Translation to technique

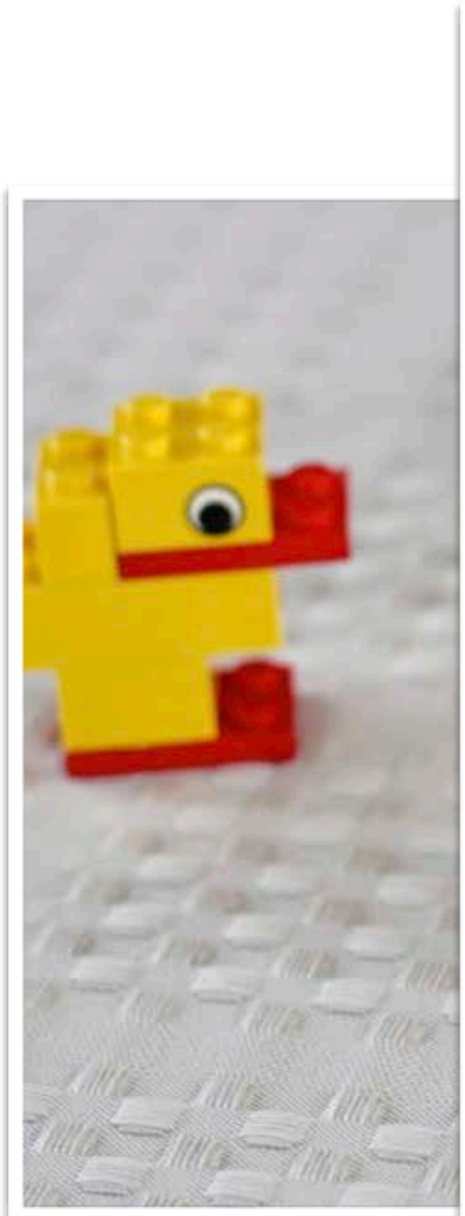
Binair counting

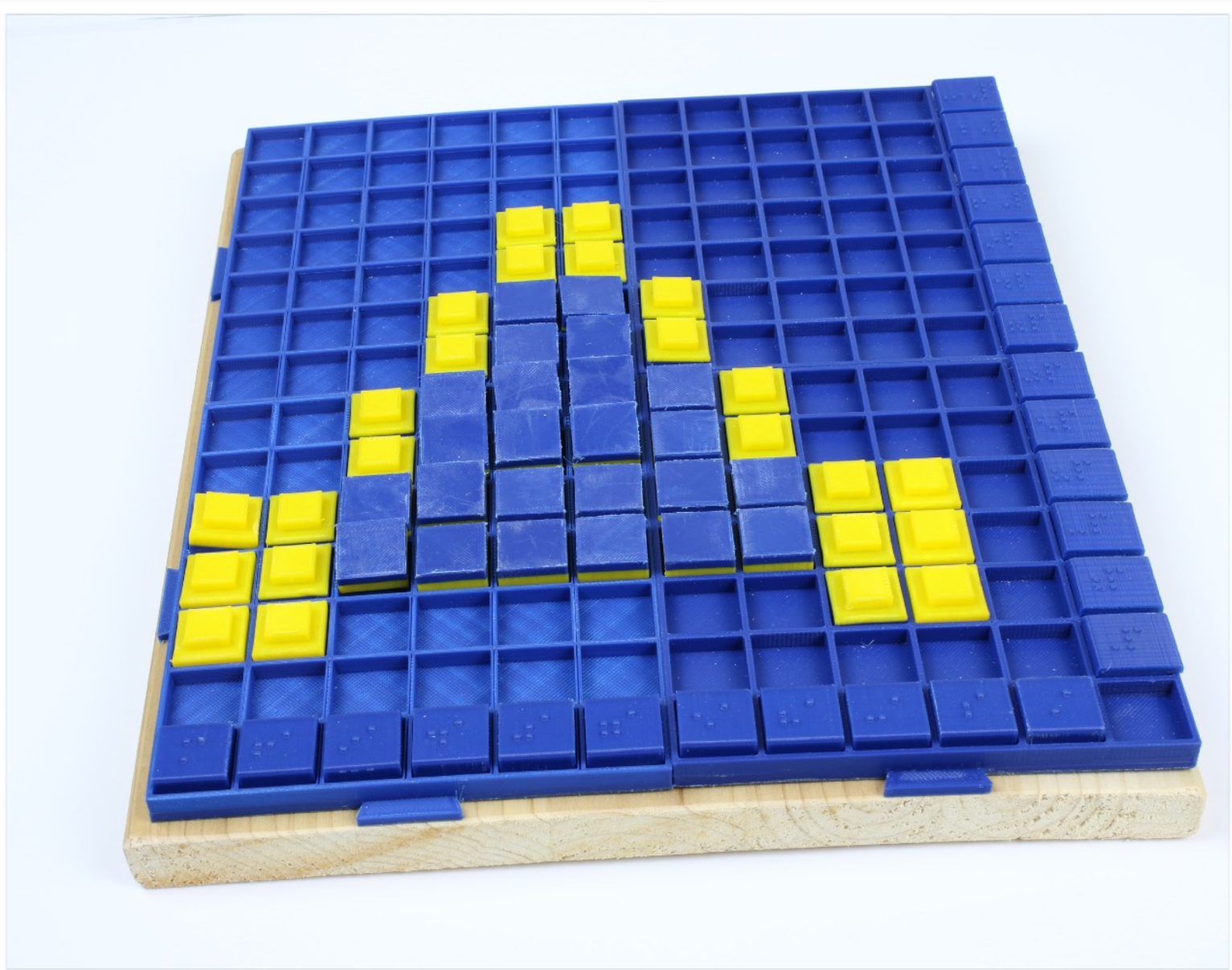


Highest classes

Working independently

Translation to programming and terminology





Visio curriculum

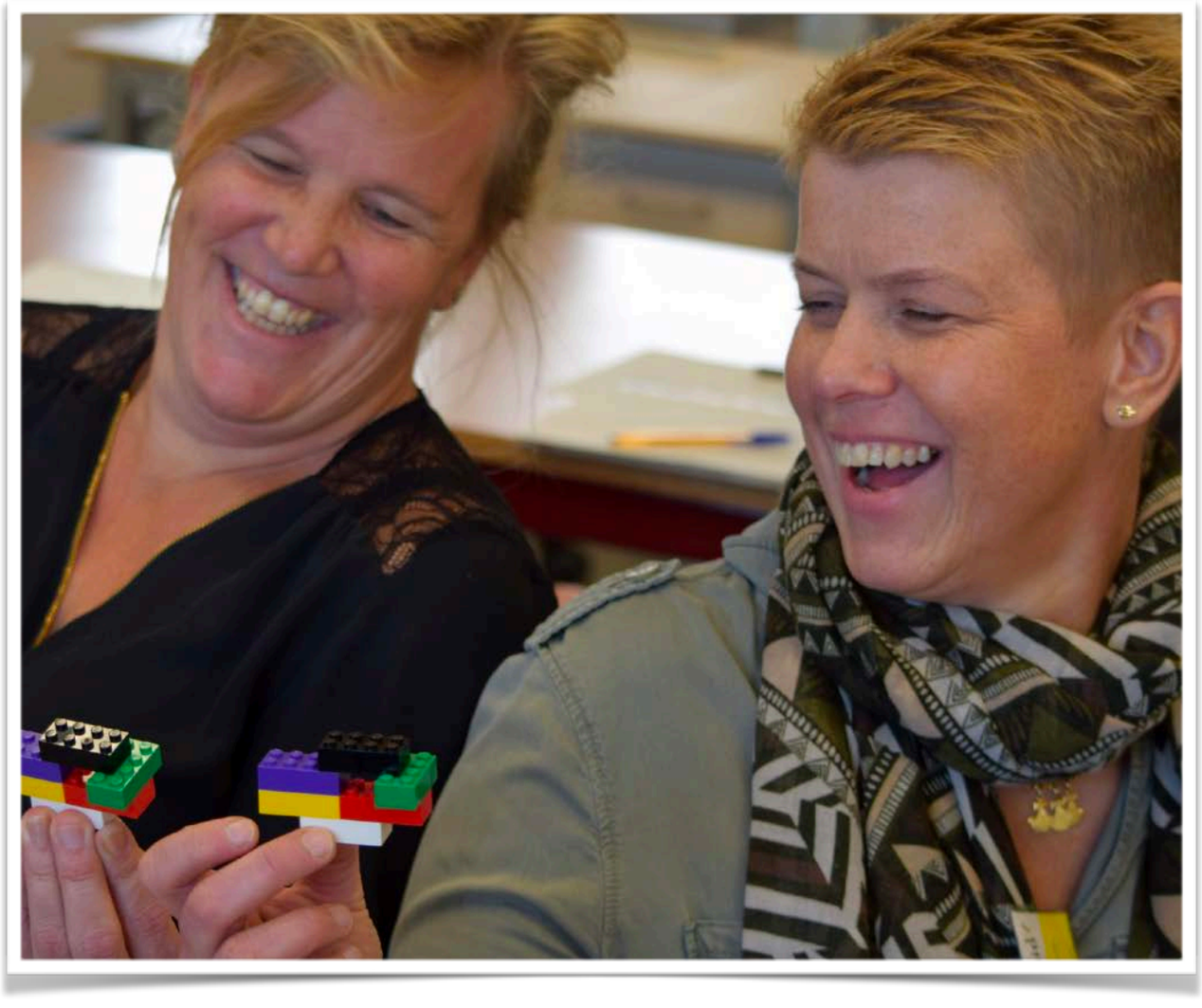
Online

Box with materials

Connection with current lessons

Short preparation time

Teachers training



Activities Visio

Curriculum Computational Thinking

Research with the University of Leiden

‘inclusive programmingtools’